

CLAIMS

What is claimed is:

1 A method for updating presence information regarding an end user in a presence server database based on information derived from a telephony-related action, the method comprising:

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- (a) receiving a signaling system seven (SS7) message in response to a telephony-related action performed by an end user;
- (b) in response to receiving the SS7 message, formulating an internet protocol (IP) message for updating presence information regarding the end user managed by a presence server; and
- 10 (c) transmitting the IP message to the presence server over an IP network.

15 2. The method of claim 1 wherein the telephony-related action includes dialing a called party telephone number utilizing a PSTN telephone and the signaling system seven message is an IAM message.

20 3. The method of claim 1 wherein the telephony-related action includes entering DTMF digits using a PSTN telephone handset after a call has been established, the DTMF digits forming a code for instructing an end office to formulate the SS7 message.

25 4. The method of claim 3 wherein the SS7 message is a transaction capabilities application part (TCAP) message containing presence information for the end user.

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5. The method of claim 1 wherein the telephony-related action is the activation of a mobile telephone handset and the SS7 message is a message for updating the status of the subscriber in at least one of a home location register (HLR) and a visitor location register (VLR).

6. The method of claim 1 wherein formulating an IP message includes formulating a presence protocol message.

7. The method of claim 1 wherein formulating an IP message includes formulating a session initiation protocol (SIP) message.

8. The method of claim 1 wherein formulating an IP message includes formulating an instant messaging and presence protocol (IMPP) message.

9. The method of claim 1 comprising, in response to receiving the SS7 message, sending a second message to an accounting and billing system.

10. The method of claim 9 wherein the second message is a copy of the SS7 message.

11. A method for processing a query to a presence server database, the method comprising:

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- (a) receiving, at presence registration and routing node, an IP message for determining presence information for an entity;
- (b) formulating a query to a presence database for obtaining the presence information;
- 5 (c) obtaining the presence information from the presence database; and
- (d) forwarding the presence information to an end user.

12. The method of claim 11 wherein receiving an IP message includes receiving a presence protocol message.

13. The method of claim 12 wherein receiving a presence protocol message includes receiving a fetch message requesting presence information regarding the entity.

14. The method of claim 11 wherein forwarding the presence information to an end user includes forwarding a presence protocol message to the end user.

15. The method of claim 14 wherein forwarding a presence protocol message includes forwarding a notify message to the end user.

16. The method of claim 11 wherein receiving an IP message includes receiving a session initiation protocol (SIP) message.

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17. The method of claim 11 wherein receiving an IP message includes receiving an instant messaging and presence protocol (IMPP) message.

5 18. The method of claim 11 wherein obtaining the presence information from the presence database includes obtaining the presence information from a presence database located internal to the presence registration and routing node.

10 19. The method of claim 11 wherein obtaining the presence information from the presence database includes obtaining the presence information from a presence database located external to the presence registration and routing node.

15 20. The method of claim 11 comprising, in response to receiving the IP message, sending a second message to an accounting and billing system.

20 21. The method of claim 20 wherein the second message is a copy of the IP message.

22. A presence registration and routing node for updating presence information regarding an end user in a presence server database, the presence registration and routing node comprising:

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(a) a communication module for receiving an SS7 message from an SS7 network; and

(b) a presence server message generator for generating a presence-server-compatible message for updating presence information regarding an end user in a presence server database, based on the SS7 message.

23. The presence registration and routing node of claim 22 comprising an advanced database communication module for encapsulating the presence-server-compatible message in an IP packet and transmitting the IP packet to a presence server over an IP network.

24. The presence registration and routing node of claim 22 wherein the presence-server-compatible message is a session initiation protocol (SIP) message.

25. The presence registration and routing node of claim 22 wherein the presence-server-compatible message is a presence protocol message.

26. The presence registration and routing node of claim 22 wherein the presence-server-compatible message is an instant messaging and presence protocol (IMPP) message.

27. The presence registration and routing node of claim 22 wherein the SS7 message is an ISDN user part (ISUP) message.

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28. The presence registration and routing node of claim 22 wherein the SS7 message is a transaction capabilities application part (TCAP) message.

29. The presence registration and routing node of claim 22 wherein the SS7 message is a message from a mobile switching center (MSC).

30. The presence registration and routing node of claim 22 comprising a presence server database operatively associated with the presence server message generator for receiving the presence-server-compatible message and for extracting the presence information in response to the presence-server compatible message.

31. The presence registration and routing node of claim 30 wherein the presence server database is located internal to the presence registration and routing node.

32. The presence registration and routing node of claim 30 wherein the presence server database is located external to the presence registration and routing node.

33. The presence registration and routing node of claim 22 wherein the presence server message generator is adapted to receive presence

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queries, forward the presence queries to a presence server database, and receive responses from the presence server database.

34. The presence registration and routing node of claim 22 comprising:

- 5 (a) means for generating an accounting message based on at least one of the SS7 message received by the communication module and the presence-server-compatible message; and
- (b) an accounting and billing system for storing accounting information based on the accounting message.

10 35. A presence registration and routing node for providing presence information regarding an entity, the presence registration and routing node comprising:

- 15 *Sub A28* (a) an advanced database communications module for receiving an IP-encapsulated presence-server-compatible message for determining presence information for an entity; and
- (b) a presence server message processor for forwarding the presence-server-compatible message to a presence server for determining the presence information.

20 36. The presence registration and routing node of claim 35 wherein the presence server message processor is adapted to receive the presence information from the presence server and forward the presence information to the advanced database communications module.

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37. The presence registration and routing node of claim 36 wherein the advanced database communications module is adapted to forward the presence information to an endpoint over an IP network.

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38. The presence registration and routing node of claim 35 comprising a presence server operatively associated with the presence server message processor for providing the presence information to the presence server message processor.

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39. The presence registration and routing node of claim 38 wherein the presence server is located internal to the presence registration and routing node.

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40. The presence registration and routing node of claim 38 wherein the presence server is located external to the presence registration and routing node.

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41. The presence registration and routing node of claim 35 comprising:

- (a) means for generating an accounting message based on the presence-server-compatible message; and
- (b) an accounting and billing system for storing accounting information based on the accounting message.

42. A computer program product comprising computer-executable instructions embodied in a computer-readable medium for performing steps comprising:

- (a) receiving a signaling system seven (SS7) message in response to a telephony-related action performed by an end user;
- (b) in response to receiving the SS7 message, formulating an internet protocol (IP) message for updating presence information regarding the end user managed by a presence server; and
- (c) transmitting the IP message to the presence server over an IP network.

43. The computer program product of claim 42 wherein the telephony-related action includes dialing a called party telephone number utilizing a PSTN telephone and the signaling system seven message is an IAM message.

44. The computer program product of claim 42 wherein the telephony-related action includes entering DTMF digits using a PSTN telephone handset after a call has been established, the DTMF digits forming a code for instructing an end office to formulate the SS7 message.

45. The computer program product of claim 42 wherein the SS7 message is a transaction capabilities application part (TCAP) message containing presence information for the end user.

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46. The computer program product of claim 42 wherein the telephony-related action is the activation of a mobile telephone handset and the SS7 message is a message for updating the status of the subscriber in at least one of a home location register (HLR) and a visitor location register (VLR).

47. The computer program product of claim 42 wherein formulating an IP message includes formulating a presence protocol message.

48. The computer program product of claim 42 wherein formulating an IP message includes formulating a session initiation protocol (SIP) message.

49. The computer program product of claim 42 wherein formulating an IP message includes formulating an instant messaging and presence protocol (IMPP) message.

50. The computer program product of claim 42 comprising generating an accounting message in response to at least one of the SS7 message and the IP message and forwarding the accounting message to an accounting and billing subsystem.

51. A computer program product comprising computer executable instructions embodied in a computer-readable medium for performing steps comprising:

- (a) receiving, at a presence registration and routing node, an IP message for determining presence information for an entity;
- (b) formulating a query to a presence database for obtaining the presence information;
- 5 (c) obtaining the presence information from the presence database based on the query; and
- (d) forwarding the presence information to an end user.

10 52. The computer program product of claim 51 wherein receiving an IP message includes receiving a presence protocol message.

15 53. The computer program product of claim 52 wherein receiving a presence protocol message includes receiving a fetch message requesting presence information regarding the entity.

54. The computer program product of claim 51 wherein forwarding the presence information to an end user includes forwarding a presence protocol message to the end user.

20 55. The computer program product of claim 54 wherein forwarding a presence protocol message includes forwarding a notify message to the end user.

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56. The computer program product of claim 51 wherein receiving an IP message includes receiving a session initiation protocol (SIP) message.

5 57. The computer program product of claim 51 wherein receiving an IP message includes receiving an instant messaging and presence protocol (IMPP) message.

10 58. The computer program product of claim 51 wherein obtaining the presence information from the presence database includes obtaining the presence information from a presence database located internal to the presence registration and routing node.

15 59. The computer program product of claim 51 wherein obtaining the presence information from the presence database includes obtaining the presence information from a presence database located external to the presence registration and routing node.

20 60. The computer program product of claim 51 comprising generating an accounting message in response to at least one of the IP message and the query and forwarding the accounting message to an accounting and billing subsystem.

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